

CLAIMS

We claim:

1. A tissue repair structure comprising a cell-free support matrix and stem cells adjacent to said matrix.
2. The tissue repair structure of claim 1, wherein said support matrix is resorbable.
3. The tissue repair structure of claim 1, wherein said support matrix is selected from the group consisting of a membrane, microbead, fleece, gel, thread, and combinations thereof.
4. The tissue repair structure of claim 1, wherein said support matrix is autologous.
5. The tissue repair structure of claim 1, wherein said support matrix is allogeneic.
6. The tissue repair structure of claim 1, wherein said support matrix comprises a combination of collagen type I and collagen type III.
7. The tissue repair structure of claim 1, wherein said support matrix comprises collagen type II.
8. The tissue repair structure of claim 1, wherein said support matrix comprises proteins or polypeptides selected from the group consisting of small intestine submucosa, peritoneum, pericardium, polylactic acid, blood, and combinations thereof.
9. The tissue repair structure of claim 1, wherein said structure is implantable or injectable.
10. The tissue repair structure of claim 1, wherein said stem cells are adhered to said support matrix.
11. A tendon repair structure comprising a cell-free support matrix and tenocytes adjacent to said matrix.
12. The tendon repair structure of claim 11, wherein said support matrix is resorbable.

13. The tendon repair structure of claim 11, wherein said support matrix is selected from the group consisting of a membrane, microbead, fleece, gel, thread, and combinations thereof.
14. The tendon repair structure of claim 11, wherein said support matrix is autologous.
15. The tendon repair structure of claim 11, wherein said support matrix is allogeneic.
16. The tendon repair structure of claim 11, wherein said support matrix comprises a combination of collagen type I and collagen type III.
17. The tendon repair structure of claim 11, wherein said support matrix comprises collagen type II.
18. The tendon repair structure of claim 11, wherein said support matrix comprises proteins or polypeptides selected from the group consisting of small intestine submucosa, peritoneum, pericardium, polylactic acid, blood, and combinations thereof.
19. The tendon repair structure of claim 11, wherein said structure is implantable or injectable.
20. The tendon repair structure of claim 11, wherein said tenocytes are adhered to said support matrix.
21. A muscle repair structure comprising a cell-free support matrix and myocytes adjacent to said matrix.
22. The muscle repair structure of claim 21, wherein said support matrix is resorbable.
23. The muscle repair structure of claim 21, wherein said support matrix is selected from the group consisting of a membrane, microbead, fleece, gel, thread, and combinations thereof.
24. The muscle repair structure of claim 21, wherein said support matrix is autologous.
25. The muscle repair structure of claim 21, wherein said support matrix is allogeneic.

26. The muscle repair structure of claim 21, wherein said support matrix comprises a combination of collagen type I and collagen type III.
27. The muscle repair structure of claim 21, wherein said support matrix comprises collagen type II.
28. The muscle repair structure of claim 21, wherein said support matrix comprises proteins or polypeptides selected from the group consisting of small intestine submucosa, peritoneum, pericardium, polylactic acid, blood, and combinations thereof.
29. The muscle repair structure of claim 21, wherein said structure is implantable or injectable.
30. The muscle repair structure of claim 21, wherein said myocytes are adhered to said support matrix.
31. An epithelium repair structure comprising a cell-free support matrix and epithelial cells adjacent to said matrix.
32. The epithelium repair structure of claim 31, wherein said support matrix is resorbable.
33. The epithelium repair structure of claim 31, wherein said support matrix is selected from the group consisting of a membrane, microbead, fleece, gel, thread, and combinations thereof.
34. The epithelium repair structure of claim 31, wherein said support matrix is autologous.
35. The epithelium repair structure of claim 31, wherein said support matrix is allogeneic.
36. The epithelium repair structure of claim 31, wherein said support matrix comprises a combination of collagen type I and collagen type III.
37. The epithelium repair structure of claim 31, wherein said support matrix comprises collagen type II.
38. The epithelium repair structure of claim 31, wherein said support matrix comprises proteins or polypeptides selected from the group consisting of small

intestine submucosa, peritoneum, pericardium, polylactic acid, blood, and combinations thereof.

39. The epithelium repair structure of claim 31, wherein said structure is implantable or injectable.
40. The epithelium repair structure of claim 31, wherein said epithelial cells are adhered to said support matrix.
41. A nerve tissue repair structure comprising a cell-free support matrix and nerve cells adjacent to said matrix.
42. The nerve tissue repair structure of claim 41, wherein said support matrix is resorbable.
43. The nerve tissue repair structure of claim 41, wherein said support matrix is selected from the group consisting of a membrane, microbead, fleece, gel, thread, and combinations thereof.
44. The nerve tissue repair structure of claim 41, wherein said support matrix is autologous.
45. The nerve tissue repair structure of claim 41, wherein said support matrix is allogeneic.
46. The nerve tissue repair structure of claim 41, wherein said support matrix comprises a combination of collagen type I and collagen type III.
47. The nerve tissue repair structure of claim 41, wherein said support matrix comprises collagen type II.
48. The nerve tissue repair structure of claim 41, wherein said support matrix comprises proteins or polypeptides selected from the group consisting of small intestine submucosa, peritoneum, pericardium, polylactic acid, blood, and combinations thereof.
49. The nerve tissue repair structure of claim 41, wherein said structure is implantable or injectable.
50. The nerve tissue repair structure of claim 41, wherein said nerve cells are adhered to said support matrix.

51. A bone repair structure comprising a cell-free support matrix and osteocytes adjacent to said matrix.
52. The bone repair structure of claim 51, wherein said support matrix is resorbable.
53. The bone repair structure of claim 51, wherein said support matrix is selected from the group consisting of a membrane, microbead, fleece, gel, thread, and combinations thereof.
54. The bone repair structure of claim 51, wherein said support matrix is autologous.
55. The bone repair structure of claim 51, wherein said support matrix is allogeneic.
56. The bone repair structure of claim 51, wherein said support matrix comprises a combination of collagen type I and collagen type III.
57. The bone repair structure of claim 51, wherein said support matrix comprises collagen type II.
58. The bone repair structure of claim 51, wherein said support matrix comprises proteins or polypeptides selected from the group consisting of small intestine submucosa, peritoneum, pericardium, polylactic acid, blood, and combinations thereof.
59. The bone repair structure of claim 51, wherein said structure is implantable or injectable.
60. The bone repair structure of claim 51, wherein said osteocytes are adhered to said support matrix.
61. A skin repair structure comprising a cell-free support matrix and keratinocytes adjacent to said matrix.
62. The skin repair structure of claim 61, wherein said support matrix is resorbable.
63. The skin repair structure of claim 61, wherein said support matrix is selected from the group consisting of a membrane, microbead, fleece, gel, thread, and combinations thereof.

64. The skin repair structure of claim 61, wherein said support matrix is autologous.
65. The skin repair structure of claim 61, wherein said support matrix is allogeneic.
66. The skin repair structure of claim 61, wherein said support matrix comprises a combination of collagen type I and collagen type III.
67. The skin repair structure of claim 61, wherein said support matrix comprises collagen type II.
68. The skin repair structure of claim 61, wherein said support matrix comprises proteins or polypeptides selected from the group consisting of small intestine submucosa, peritoneum, pericardium, polylactic acid, blood, and combinations thereof.
69. The skin repair structure of claim 61, wherein said structure is implantable or injectable.
70. The skin repair structure of claim 61, wherein said keratinocytes are adhered to said support matrix.
71. A method for repairing a tissue defect in a patient, said method comprising:
 - a) extracting and isolating cells from said patient;
 - b) seeding said cells onto a cell-free support matrix; and
 - c) implanting said support matrix at the site of said tissue defect,wherein said cells are selected from the group consisting of tenocytes, stem cells, nerve cells, myocytes, keratinocytes, epithelial cells, and osteocytes.
72. The method of claim 71, wherein said support matrix comprises proteins or polypeptides selected from the group consisting of small intestine submucosa, peritoneum, pericardium, polylactic acid, blood, and combinations thereof.
73. The method of claim 71, wherein said support matrix is resorbable.
74. The method of claim 71, wherein said support matrix is selected from the group consisting of a membrane, microbead, fleece, gel, thread, and combinations thereof.
75. The method of claim 71, wherein said support matrix is autologous.
76. The method of claim 71, wherein said support matrix is allogeneic.

- 77. The method of claim 71, wherein said support matrix comprises a combination of collagen type I and collagen type III.
- 78. The method of claim 71, wherein said support matrix comprises collagen type II.
- 79. The method of claim 71, wherein said support matrix is implantable or injectable.
- 80. The method of claim 71, wherein said cells are adhered to said support matrix.
- 81. A method for increasing adipose tissue in a patient, said method comprising:
 - a) extracting and isolating adipocytes from a patient;
 - b) seeding said adipocytes onto a cell-free support matrix; and
 - c) implanting said support matrix at a desired site for increased adipose tissue.
- 82. The method according to claim 81, wherein said desired site is a breast of said patient.